coast; whilst half an hour for tow netting, in view of the fact that two or three collections are apparently put into the same bottle, is certainly too long.

The illustrations, 123 in number, are mainly derived from photographs, the majority of which show a considerable lack of skill on the part of the photographer. One or two appear to be out of focus, many are too much of the soot and sawdust type; while in others the background chosen is not calculated to show up the "sitter" to the best advantage. Typographical errors, of which there are a fair number, are almost invariably confined to scientific names, such as *Nephtys* for *Nephthys*, Maidæ for Maiadæ, Spangus for *Spatangus*.

In spite of the above faults, we can, however, recommend the book to all beginners in the fascinating art of shore collecting, although, of course, it does not obviate the necessity of access to monographs on the various groups. R. A. T.

Field Operations of the Bureau of Soils, 1904. (Sixth Report.) Pp. 1151+a case of 53 maps. (Washington: United States Department of Agriculture, 1905.)

THE United States Survey of Soils continues from year to year its enormous task, under the direction of its chief, Mr. Milton Whitney, and the present sixth report differs in no essential respect from its predecessors. The soil divisions are mapped upon a basis of physical texture, the same name being used right across the continent for soils which are judged to be of the same type, however different the origin or however remote the locality from that of the type originally credited with the name. It is just this classification which has been called in question by the critics of the survey in the United States, who discredit both the methods of identification and analysis which are adopted, and also the rapidity with which the work is pushed along. Certainly when the cost of the survey amounts to less than 10s. per square mile, as in the present case, the distribution of soils in the United States must be very different from what we are familiar with in the Old World, or else the maps can be little more than very sketchy first approximations. However, we are too far away to have any means of forming a judgment in this domestic discussion, but what the English reader will always find of value in this survey are the preliminary general accounts of the physiography and agricultural development of each area. There we get sketches of the style of farming and the local conditions which compare, though in a more scientific fashion, with the reports on the counties of England initiated by Arthur Young a little more than a hundred years ago. Doubtless in time these reports will have the same permanent value for America as a detailed picture of the state of the country and the position of its chief industry.

Hypnotism and Spiritism—A Critical and Medical Study. By Dr. Joseph Lapponi; translated by Mrs. Phillip Wicks. Pp. xiv+268. (London: Chapman and Hall, Ltd., 1906.) Price 5s. net.

THE opening chapter deals with the historical data connected with hypnotism and spiritism, and the author points out how spiritism passed through the various stages of spirit rapping up to definite materialisation. Dr. Lapponi then describes what is understood by hypnosis, and it is clear that his views are not in accord with those held by most authorities at the present time. When the reader reaches the chapter on "Details about Spiritism," he will find a most vivid description of a *séance*, as given by "some of the best and most esteemed mediums." The author honestly states that he has not had personal experience of the "truth and reality of the marvellous phenomena" which he describes; nevertheless, he is evidently convinced of its actual existence. Dr. Lapponi gives some interesting accounts of the mystic performances of the Indian fakirs, and also records some instances of telepathy.

In discussing the relationship of hypnotism and spiritism, he endeavours to prove that there is little or no relationship between them, a fact which few would dispute; on the other hand, we do not think that the arguments which he adduces would go far towards convincing the sceptic. The author admits that "illusions and hallucinations explain some isolated cases of spiritism"; he also allows that mediums may have largely had recourse to frauds in order to enhance their reputations, and he is generous enough further to concede that "to the spiritistic frauds done voluntarily may be added others, not only involuntary but unconscious"; but even after allowing all these, he considers that there are phenomena which are well authenticated, and for which neither deception, art, nor science can render an account. This may be true, but because a matter is too subtle to unravel does not justify us in assuming that it is the result of spiritism. The author's attempt to account for the valuelessness of spirit revelation is very feeble, but it is left to the closing chapter to reveal the worthlessness of spiritism, for here we read that "spiritism is always dangerous, harmful, immoral, reprehensive, to be condemned and most severely prohibited without reserve, in all its grades, forms, and possible manifestations," except, maybe, in some rare exceptions. Surely, if there are spirits with whom we can confer, some of them should be able to raise us to higher planes of thought, for the spirit world should belong to a hierarchy which is nearer to the perfect.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Festival of St. Alban.

WITH regard to what is said concerning the date of this festival in the review of the "Life of St. Patrick" in NATURE of July 25 (p. 296), it is to be noted that there is really only one date for the festival. In the time of Bede (H. E., i., 7), as in the pre-Reformation calendars of the English Church, as well as in the Latin Prayer Book of Queen Elizabeth, 1560, the date is June 22. But when the festival reappeared in the English Prayer Book of 1662 it was placed on June 17, an obvious error which is supposed to have arisen from wrongly writing xvii. for xxii. In the Roman calendar the date is, of course, June 22. C. S. TAYLOR.

Banwell Vicarage, July 26.

THE information supplied by the Rev. C. S. Taylor is most welcome. The evidence for regarding the 22nd as an arrested solstitial day, in connection with St. Alban, is now fairly conclusive.

(1) The 22nd was one of the three solstitial days about 303 A.D., the supposed date of Alban's martyrdom.

(2) If closely studied with that fact in view, the legend of his martyrdom, like those of the death of Patrick and Dewi, may reveal a clear midsummer festival setting. That much may be gathered from the statement that Alban was summoned to do sacrifice to the pagan gods. We know from other sources that people were penalised for non-attendance at the great pagan festivals.

(3) There is evidence that St. Alban's festival covered the three solstitial days.

(*a*) One old Welsh calendar fixes the festival on the 23rd.

(*b*) Though our modern bards call each of the solstitial quarter days an Alban, there is very little authority for such a use of the name. What appears likely is that Alban became a name of the midsummer festival, and that a bardic scribe at first wrongly applied the name to the other quarter days. The Alban of the bards covered three days, and each day is specially named. The first is the Vigil of the Alban, the second is the Alban itself, and the third is the Banquet of the Alban.

(4) Why have the Welsh made so much of the name Alban? The reason may be found in the association of the name with Caerleon-upon-Usk.

(*a*) There are some ruins near that ancient city still called Mount St. Alban's.

(*b*) Mr. Wade-Evans has made out a good case for localising Alban's martyrdom at that spot (in "Archæologia Cambrensis," about two years ago).

(*c*) Geoffrey of Monmouth tells us of a great observatory or school of astronomers in or near that city.

St. Alban's Day being the chief day of the year, and an observatory bearing his name, probably, at Caerleon being apparently the Greenwich of Wales at one time, it is no wonder that the Welsh bards have adopted the name as a solstitial epithet without ever a mention of Alban's martyrdom.

We have in Wales a very modern instance of the same process. In some districts June 22 is observed as Gwyl Barna, the Vigil of Barnabas. St. Barnabas's Day is the 11th, and in the seventeenth century it coincided with the solstice; but since 1752 it has been in those parts associated with the 22nd, and Gwyl Barna is now a name of the solstice. In the neighbourhood of Llandeilo Talybont, Glam., it is the custom of the farm labourers to get together the hay-making implements on the morning of Gwyl Barna, before going to a solstitial fair in the neighbourhood.

JOHN GRIFFITH.

Llangynwyd, Glam.

The Sun's Motion with respect to the Æther.

So far as I know, it has not been pointed out that the velocity of light, as deduced from the observed times of occultation of Jupiter's satellites, is affected to the first order by the motion of the earth and Jupiter with respect to the æther. Taking the times best suited to such observations, when the distance between the two planets is very nearly a maximum or a minimum, there will be no appreciable relative velocity in the line of centres, and, to a first approximation, the velocity with which light from Jupiter approaches us is then made up of the true propagation-velocity increased by the common velocity-component of the two planets in the direction earth to Jupiter.

In order to determine the sun's motion with respect to the æther, the values for the apparent velocity of light deducible from the observed times of occultation might be analysed, so as to discover any systematic differences depending on the direction of the line of centres. Only very small corrections would be needed on account of the motion of the planets in their line of centres relatively to the sun. The probable absolute error in the finally deduced velocity of the sun (relatively to the æther) would be of the same order as that affecting the finally deduced velocity of light. The quantity to be determined might perhaps be swamped by the errors of observation, but even so a superior limit could be assigned to the sun's velocity through the æther. Two of the three rectangular components of that velocity being measured in the plane of the ecliptic, the determination of the third component would unfortunately be very badly conditioned. It may be some consolation, however, to reflect that a knowledge of our motion with respect to the æther is not theoretically unattainable.

Again, if the mean æthereal density is either less or greater where atomic matter is present than in free æther, it appears from some results which I have lately obtained in connection with a modified theory of gravitation that motional forces would be experienced (for example) by two bodies moving with uniform translational velocity through the æther. These forces would be proportional to the product of the masses of the two bodies, to the square of the velocity of translation, and inversely to the fourth power of the distance between the bodies. They would be equal in magnitude and opposite in direction, but would not in general act in the same line, so that an elongated body, partaking of the earth's diurnal and orbital motion, would in general be acted on by a couple. This couple would vary as the diurnal motion changed the orientation of the body, and if the variations were measurably great, we should have the means of determining, save for a constant factor and an ambiguity of sign, the velocity of the earth with respect to the æther at any point of its orbit. Observations at three or more points of the orbit would enable us to evaluate the constant factor and to remove the ambiguity of sign, thus determining the velocity of the sun with respect to the æther.

The effects referred to might or might not be detectable, but by means of quite simple apparatus they could be tested for with great delicacy. I hope shortly to publish a fuller account of the analysis on which the above conclusions are based.

C. V. BURTON.

Cambridge, July 29.

The Dog's Sense of Direction of Sound.

OUR dog, Spot, of the intelligence of which an instance has been recorded in NATURE, is peculiarly sensitive to sound. The following instance may be worth recording. On Sunday, July 21, a heavy storm of thunder and lightning with rain broke over Wick. I sat in the porch of our house watching—Spot with me. The lightning was frequent, and the thunder played round in all directions—over Bath six miles to the east and Bristol six miles to the south-west.

Spot barked at each clap or rumble and rushed forward, always *towards the direction* from which the thunder appeared to come; the lightning affected him in no way. It was laughable when the thunder appeared to come from no definite direction, but to play round us. For then he ran, barking, over the lawn and round the trees as if angered by a sound he could not locate. I observed carefully what he did for perhaps half an hour, and I think Spot located the directions of sound at least as quickly as I did myself.

F. C. CONSTABLE.

THE INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.

THE second International Congress on School Hygiene was opened on Monday last at the University of London by Lord Crewe, in the presence of a large gathering, which included delegates from all the countries of Europe, the Colonies, and North and South America, in addition to representatives of administrative bodies in Great Britain. We shall publish at a later date an account of the proceedings of the Congress, but are pleased meanwhile to direct attention to the warm interest taken by the King in the objects for the consideration of which the congress was convened; indeed, but for the King's intervention, the congress would probably have been anything but a success, as will be seen by the opening remarks of the president, Sir Lauder Brunton, F.R.S.

Lord Crewe, Lord President of the Council, in opening the congress, said the first duty he had to perform in connection with the opening ceremony was a very agreeable one. He had a gracious command from the King to express to them the interest with which His Majesty regarded the subjects with which the congress was concerned and his hopes that its discussions might be a great success. His Majesty had further commanded him to express his regret that, owing to his enforced absence from London, he was unable to receive those who were to attend the congress. He was also privileged as a member of the Government to express the same desire on their part that the proceedings of the congress might be crowned with success, and on behalf of the Government to offer them all a hearty welcome. It was not in a strict sense an official conference. It was not subject to official control, it was not run on official lines, and it was not subsidised by official money. That, from many points of